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a cylindrical fixed surface surrounding the rotary member, wherein the fixed surface is spaced from the rotary member by a predetermined distance, and wherein the material of the rotary member has a coefficient of thermal expansion that is smaller than that of the material of the fixed surface; and

armature coils arranged about a peripheral surface of the fixed surface to rotate the rotary shaft.

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8. (Amended) The motor according to claim 1, further comprising a case for accommodating the bearing, the rotary member, and the fixed surface, wherein the case has a slit for cooling the bearing, the rotary member, and the fixed surface.

9. (Amended) A motor comprising:

a rotary shaft; and

a bearing for radially supporting the rotary shaft, wherein the bearing includes:

a cylindrical rotary member connected to the rotary shaft;

a cylindrical fixed surface surrounding the rotary member, wherein the fixed surface is spaced from the rotary member by a predetermined distance, and wherein the rotary member is made of a material having a coefficient of thermal expansion that is $5 \times 10^{-6}/^{\circ}\text{C}$ or less; and

armature coils arranged about a peripheral surface of the fixed surface to rotate the rotary shaft.

63 Sub 7 12. (Amended) The motor according to claim 9, further comprising a case for accommodating the bearing, the rotary member, and the fixed surface, wherein the case has a slit for cooling the bearing, the rotary member, and the fixed surface.

13. (Amended) A turbo-molecular pump comprising:

a housing;

a stator vane attached to the housing;

a rotor vane rotated relative to the stator vane; and

a motor for driving the rotor vane, wherein the motor includes:

a rotary shaft; and

a bearing for radially supporting the rotary shaft, wherein the bearing includes:

a cylindrical rotary member connected to the rotary shaft;

a cylindrical fixed surface surrounding the rotary member, wherein the fixed surface is spaced from the rotary member by a predetermined distance, and wherein the material of the rotary member has a coefficient of thermal expansion that is smaller than that of the material of the fixed surface; and

armature coils arranged about a peripheral surface of the fixed surface to rotate the rotary shaft.

63 Sub 7 15. (Amended) A turbo-molecular pump comprising:

a housing;

a stator vane attached to the housing;

a rotor vane rotated relative to the stator vane; and

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a motor for driving the rotor vane, wherein the motor includes:

a rotary shaft; and

a bearing for radially supporting the rotary shaft, wherein the bearing includes:

a cylindrical rotary member connected to the rotary shaft;

a cylindrical fixed surface surrounding the rotary member, wherein the fixed surface is spaced from the rotary member by a predetermined distance, and wherein the rotary member is made of a material having a coefficient of thermal expansion that is $5 \times 10^{-6}/^{\circ}\text{C}$ or less; and

armature coils arranged about a peripheral surface of the fixed surface to rotate the rotary shaft.